Seat No:_____ Enrollment No:_____

PARUL UNIVERSITY

FACULTY OF APPLIED SCIENCE

B.Sc. Winter 2017-18 Examination

Semester: 1 **Date: 22/12/2017**
Subject Code: 11107103 **Time: 10:30am to 01:00pm**
Subject Name: Basic of forensic physics **Total Marks: 60**

Instructions:
1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

Q.1. A) Answer the following questions. (Each of 04 marks) **(08)**
(a) Write the applications of LASER.
(b) Explain any four factors that affect the acoustics of the building.

Q.1. B) Answer the following questions. (Any two)
(a) Do as directed. (Each of 02 marks) **(04)**
1. Write any two Newton's law of motion.
2. Explain total internal reflection.

(b) Derive Bernoulli's equation. **(04)**
(c) Derive Angle of acceptance of an optical fiber. **(04)**

Q.2. A) Answer the following questions.
(a) Do as directed. (Each of 02 marks) **(04)**
1. Explain half life.
2. Draw the symbol and truth table of AND and OR gates.

(b) Explain source free DC "RL" circuit. **(04)**

Q.2. B) Answer the following questions. (Any two)
(a) Do as directed. (Each of 01 marks) **(03)**
1. Write down the principle of LASER.
2. Write down the frequency range of ultrasonic wave.
3. Write the formula to find an age of a particle.

(b) Write down the applications of Radio Isotopes. **(03)**
(c) Derive the path difference formula for fringes in wedge shaped films. **(03)**

Q.3. A) Answer the following questions. (Each of 04 marks) **(08)**
(a) Explain refraction through lens combinations.
(b) Explain any one method for production of ultrasonic wave.

Q.3. B) Answer the following questions. (Any two)
(a) Do as directed. (Each of 02 marks) **(04)**
1. Explain LDR in short.
2. Define pseudo force.

(b) Derive the equation of continuity. **(04)**
(c) Write down the properties of LASER. **(04)**

Q.4. A) Answer the following questions.
(a) Do as directed. (Each of 02 marks) **(04)**
1. Define reverberation time with its unit.
2. If the intensity of a source of sound is increased 20 times its value, by how many decibel does the intensity level increase?

(b) Explain beta decay. **(04)**

Q.4. B) Answer the following questions (Any two)
(a) Do as directed. (Each of 01 marks) **(03)**
1. Give the unit of absorption coefficient.
2. Draw the pin diagram of 555 timer circuit.
3. Write the poiseuille's equation.

(b) Explain gamma decay. **(03)**
(c) In piezoelectric oscillator, thickness of plate is 5mm, young's modulus of plate is 8×10^{10} N/m^2 & density is 5000 kg/m^3. Find the natural frequency of vibration of plate, if the circuit contains inductor of 1 Henry then find the value of capacitance required. **(03)**